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| MOWLA, GOLAM | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/525,058 | BRABEC ET AL. | |
| | Examiner | Art Unit | |
| | GOLAM MOWLA | 1795 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *06 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-4,6-17 and 20-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-17 and 20-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/06/2008 has been entered.

### *Response to Amendment*

2. Applicant's response of 10/06/2008 does not place the Application in condition for allowance.

3. Claims 1-4, 6-17 and 20-27 are pending. Applicant has cancelled claims 5 and 18-19.

### *Status of Objections and Rejections*

4. All objections and rejections from the previous office Action mailed on 09/12/2008 are withdrawn in view of Applicant's amendment. New ground(s) of rejection is/are necessitated by the amendment.

***Claim Rejections - 35 USC § 102***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 3-4, 6-7 and 9-11 are rejected under 35 U.S.C. 102 (b) as being anticipated by Saurer et al. (US 5482570).

Regarding claim 1, Saurer discloses an organic photovoltaic component (see fig. 2; col. 3, lines 6-62), comprising:

- a substrate (2, fig. 2, col. 3, lines 55-62),
- a first electrode (first electrode 6, fig. 2) supported by the substrate (2),
- an organic semiconductor (layer 16; see fig. 2; col. 6, lines 36-48) supported by the first electrode (6),
- a second electrode (second electrode 10, fig. 2, col. 3, lines 38-44) supported by the organic semiconductor layer (16),
    - wherein the substrate has a surface (top surface) that is structured (major faces 4 as shown in fig. 1 and 2; see col. 3, lines 55-62), and the organic semiconductor layer (16) has a planar surface (see layer 16; fig. 2).

Regarding claim 3, Saurer further discloses that the substrate (2) is structured (major faces 4 as shown in fig. 1 and 2; see col. 3, lines 55-62).

Regarding claim 4, Saurer discloses a method (see fig. 2; col. 3, lines 6-62), comprising:

- providing a substrate (2) having a structured surface (top surface with major faces 4; see fig. 2; col. 3, lines 55-62); and
- supporting a semiconductor layer (16) with the structured surface (4) of the substrate (2) while preserving the structured surface (4) of the substrate (see fig. 2),
- wherein the semiconductor layer has a planar surface (see top surface layer 16; fig. 2)

Regarding claim 6, Saurer further discloses that the method further comprises disposing an additional layer (electrode 6; see fig. 2) on the structured surface of the substrate so that the additional layer has a structured surface (see fig. 2) that supports the semiconductor layer (16).

Regarding claim 7, Saurer discloses a photovoltaic cell (see fig. 2; col. 3, lines 6-62), comprising:

- a substrate (2, fig. 2, col. 3, lines 55-62) having a structured surface (major faces 4 as shown in fig. 1 and 2; see col. 3, lines 55-62),
- a first electrode (first electrode 6, fig. 2) supported by the structured substrate (2),
- a second electrode (second electrode 10, fig. 2, col. 3, lines 38-44)
- an organic semiconductor (layer 16; see fig. 2; col. 6, lines 36-48) between the first (6) and second (10) electrodes,
    - wherein a surface (top surface) of the organic semiconductor (16) is planar (see layer 16; fig. 2).

Regarding claim 9, Saurer further discloses that the first electrode (6) is structured (see col. 3, lines 55-62).

Regarding claim 10, Fujimori further discloses that the first electrode (6) is disposed on the substrate (2, see fig. 2).

Regarding claim 11, Fujimori further discloses that the first electrode (3) is made of ITO (see col. 3, lines 29-35). Electrode made of ITO is a cathode (applicant's specification, page 2, ¶ 3).

***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 2 and 8 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Saurer as applied to claims 1 and 7 above, and further in view of the collective teachings of Fujimori (US PGPUB 2002/0108649 as cited previously) and Feinberg (US 4636578).

Regarding claims 2 and 8, Applicant is directed above for complete discussion of Saurer with respect to claims 1 and 7, which is incorporated herein. Saurer further discloses that the substrate is made of organic material (see col. 4, lines 8-11). However, Saurer is silent as to whether the substrate is flexible.

Fujimori discloses an organic photovoltaic component (photoelectric conversion device comprising organic compound, see abstract) wherein the substrate (#2, see fig.

2) is made of organic material such as PET, PES or PEN (see [0071]) and further discloses that the substrate (2) is a flexible sheet (¶s [0071] and [0074]).

Feinberg discloses a photovoltaic cell (photocell module; see title and abstract) (see also col. 1, lines 6-9) whereby the device (panel comprised of photocells 12 as shown in fig. 1 ; see col. 3, lines 33-49) comprised of flexible substrates (first sheet 10 and second sheet 11 as shown in fig. 1) (see col. 3, lines 62-67). Feinberg further shows that the flexible substrates (first sheet 10 and second sheet 11 as shown in fig. 1) allows the device to have improved flexibility due to utilization of flexible material (see col. 3, lines 59-67)

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the flexible organic material substrate of Fujimori in the photovoltaic cell of Saurer because such use of flexible substrate is conventional in the photovoltaic art as it allows the device to have improved flexibility due to utilization of flexible material, as shown by the collective teachings of Fujimori and Feinberg.

9. Claims 12 and 13 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Saurer as applied to claim 7 above, and further in view of Nakamura (US 6291763, cited in the prior Office Action).

Regarding claim 12, Saurer discloses a photovoltaic cell as addressed above with respect to claim 7, which is incorporated herein. Saurer, however, does not explicitly disclose whether the photovoltaic cell further comprise a planarized layer between the substrate and the first electrode.

Nakamura teaches a photovoltaic cell (photoelectric conversion device, see title) wherein the cell comprises a planarized layer (metal mesh 9, fig 2B) between the substrate (transparent substrate 13, fig. 2B, Col. 29, lines 49-54) and first electrode (transparent conductor layer, 12, fig. 2B, Col. 29, lines 49-54). Nakamura uses the additional planarized layer between the substrate (13) and the first electrode (12) because it allows for a decrease in the resistance of the transparent substrate (Col. 6, lines 22-26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the planarized layer of Nakamura between the substrate and electrode in the photovoltaic cell of Saurer, because it allows for a decrease in the resistance of the transparent substrate, as taught by Nakamura.

Regarding claim 13, Saurer in view of Nakamura discloses a planarized layer between the substrate and the first electrode. Since the planarized layer is in between the substrate and the first electrode, the electrode is disposed on the planarized surface.

10. Claims 14 and 15 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Saurer as applied to claim 7 above, and further in view of Fujimori.

Regarding claim 14, Applicant is directed above for complete discussion of Saurer with respect to claim 7, which is incorporated herein. Saurer is silent as to whether the photovoltaic cell further comprises a planarized layer between the organic semiconductor (16) and the first electrode (6).

Fujimori further discloses a photovoltaic cell (see fig. 2) wherein the photovoltaic cell comprises a planarized layer (barrier layer 8, ¶ 0069; see fig. 7 that shows the barrier layer is planarized) between the organic semiconductor (5) and the first electrode (3). Fujimori utilizes a planarized layer between the organic semiconductor (5) and the first electrode (3) because it constitutes short-circuit preventing or suppressing means for preventing or suppressing short-circuit between the first electrode and the semiconductor layer (see abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the planarized barrier layer of Fujimori in between the organic semiconductor (16) and the first electrode (6) of Saurer in the photovoltaic cell of Saurer, because it constitutes short-circuit preventing or suppressing means for preventing or suppressing short-circuit between the first electrode and the semiconductor layer, as shown by Fujimori.

Regarding claim 15, Saurer further discloses that the first electrode (6) is disposed on the substrate (2) (see fig. 2).

11. Claims 16-17 and 20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Fujimori in view of Shinohara et al. (US 5891264, as cited in IDS submitted on 05/09/2005).

Regarding claim 16, Fujimori discloses a photovoltaic cell, comprising:

- a substrate (2, fig. 2, ¶ 0069);

- a first electrode (first electrode 3, fig. 2, ¶ 0069) supported by the substrate (2);
- a first layer (barrier layer 8; fig. 2) supported by the first electrode (3);
- a second layer (electron transport layer 4 with dye 5 absorbed therein; fig. 2) supported by the first layer (8) (fig. 2);
- a second electrode (second electrode 6, fig. 2, ¶ 0069); and
- an organic semiconductor (hole transport layer 5, fig. 2; ¶ 0069, 0104, 0016, 0221, 0223) between the first (3) and second (6) electrodes,
    - wherein the first electrode (3) is structured ("*The first electrode 3 is …formed into a shape, for example, which has a plurality of comb teeth*", ¶ 0081), a surface of the second layer (top surface of layer 4) is planar (see fig. 1), and a surface of the organic semiconductor (top surface of layer 5) is planar (see fig. 1).

However, Fujimori is silent as to whether the surface of the first layer (8) is structured.

Shinohara discloses a solar cell wherein a first layer (barrier layer 11; fig. 2) supported by the first electrode (Al film 10) and the surface of the first layer is structured (see fig. 2). Shinohara utilizes a structured barrier layer, i.e., first layer because it absorbs a long wavelength component of light easily (col. 9, lines 14-15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the structured first layer of Shinohara in the

photovoltaic cell of Fujimori, because it allows the absorption of long wavelength component of light easily, as taught by Shinohara.

Regarding claim 17, Fujimori further discloses that the substrate (2) is not structured (see fig. 1).

Regarding claim 20, Fujimori further discloses the substrate (2) is flexible (¶ 0074).

12. Claims 1-4 and 6-11, 14-15, 21-23 and 27 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Fujimori in view of Saurer.

Regarding claim 1, Fujimori discloses an organic photovoltaic component (photoelectric conversion device comprising organic compound, see abstract) comprising:

- a substrate (2, fig. 2, ¶ 0069),
- a first electrode (first electrode 3, fig. 2, ¶ 0069) supported by the substrate (2),
- an organic semiconductor (hole transport layer 5, fig. 2; ¶ 0069, 0104, 0016, 0221, 0223) layer supported by the first electrode (3) and
- a second electrode (second electrode 6, fig. 2, ¶ 0069) supported by the organic semiconductor layer (5),
    - wherein the organic semiconductor layer (5) has a planar surface (see layer 5).

However, Fujimori does not explicitly disclose whether the substrate has a surface that is structured.

Saurer teaches a photovoltaic device (photovoltaic cell 1; see fig. 2; col. 3, lines 6-65) wherein the substrate (2) is structured (see fig. 2; col. 3, lines 55-62). Saurer further discloses that the surface of the semiconductor layer (16) is planar. Saurer utilizes a structured substrate because such use is conventional in the photovoltaic art as it allows for a cell having a relatively large efficacy of light collection by multiple diffusion of the light (col. 4, lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have teachings of Saurer in the photovoltaic component of Fujimori and structure the surface of the substrate, because such use is conventional in the solar or photovoltaic art as it allows for a cell having a relatively large efficacy of light collection by multiple diffusion of the light, as taught by Saurer.

Regarding claim 2, Fujimori in view Saurer teaches that the substrate has a surface that is structured. Fujimori further discloses that said substrate (2) is a flexible sheet that is structured (¶ 0074).

Regarding claim 3, Fujimori in view of Saurer further discloses that the substrate (2) below the semiconductor layer (5) is structured.

Regarding claim 4, Fujimori discloses a method, comprising:

- providing a substrate (2, fig. 2, ¶ 0069) having a surface; and
- supporting a semiconductor layer (hole transport layer 5, fig. 2, ¶ 0069, 0106, 0221, 0223) with the surface of the substrate (2),

- wherein the semiconductor has a planar surface (see figs. 1 and 2).

However, Fujimori does not explicitly disclose whether the substrate has a structured surface.

Saurer teaches a photovoltaic device (photovoltaic cell 1; see fig. 2; col. 3, lines 6-65) wherein the substrate (2) is structured (see fig. 2; col. 3, lines 55-62). Saurer utilizes a structured substrate because such use is conventional in the photovoltaic art as it allows for a cell having a relatively large efficiency of light collection by multiple diffusion of the light (col. 4, lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have teachings of Saurer in the method of Fujimori and structure the surface of the substrate, because such use is conventional in the solar or photovoltaic art as it allows for a cell having a relatively large efficacy of light collection by multiple diffusion of the light, as taught by Saurer.

Regarding claim 6, Fujimori in view of Saurer discloses that the substrate has a structured surface (see discussion above for claim 5). Fujimori further discloses that the method further comprises disposing an additional layer (electrode 3; fig. 1 and 2) on the structured surface of the substrate so that the additional layer has a structured surface ("*The first electrode 3 is …formed into a shape, for example, which has a plurality of comb teeth*", ¶ 0081) that supports the semiconductor layer (5).

Regarding claim 7, Fujimori discloses a photovoltaic cell, comprising:

- a substrate (2, fig. 2, ¶ 0069) having a surface,

- a first electrode (first electrode 3, fig. 2, ¶ 0069) supported by the surface of the substrate (2),
- a second electrode (second electrode 6, fig. 2, ¶ 0069),
- an organic semiconductor layer (hole transport layer 5, fig. 2; ¶ 0069, 0104, 0016, 0221, 0223) between the first (3) and second (6) electrodes and
    - wherein a surface (top surface) of the semiconductor layer (5) is planar (see figs. 1 and 2).

However, Fujimori does not explicitly disclose whether the surface of the substrate is structured.

Saurer teaches a photovoltaic device (photovoltaic cell 1; see fig. 2; col. 3, lines 6-65) wherein the substrate (2) is structured (see fig. 2; col. 3, lines 55-62). Saurer further discloses that the surface of the semiconductor layer (16) is planar. Saurer utilizes a structured substrate because such use is conventional in the photovoltaic art as it allows for a cell having a relatively large efficacy of light collection by multiple diffusion of the light (col. 4, lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have teachings of Saurer in the photovoltaic component of Fujimori and structure the surface of the substrate, because such use is conventional in the solar or photovoltaic art as it allows for a cell having a relatively large efficacy of light collection by multiple diffusion of the light, as taught by Saurer.

Regarding claim 8, Fujimori in view Saurer teaches that the substrate has a surface that is structured. Fujimori further discloses that said substrate (2) is a flexible sheet (¶ 0074) that is structured.

Regarding claim 9, Fujimori further discloses that the first electrode (3) is structured ("*The first electrode 3 is …formed into a shape, for example, which has a plurality of comb teeth*", ¶ 0081).

Regarding claim 10, Fujimori further discloses that the first electrode (3) is disposed on the substrate (2, see fig. 2).

Regarding claim 11, Fujimori further discloses that the first electrode (3) is made of ITO. Electrode made of ITO is a cathode (applicant's specification, page 2, ¶ 3).

Regarding claim 14, Fujimori further discloses that the photovoltaic cell further comprises a planarized layer (barrier layer 8, ¶ 0069; see fig. 7 that shows the barrier layer is planarized) between the organic semiconductor (5) and the first electrode (3).

Regarding claim 15, Fujimori further discloses that the first electrode (3) is disposed on the substrate (2) (see fig. 2).

Regarding claim 21, Fujimori further discloses that the first electrode (3) has a structured surface ("*The first electrode 3 is …formed into a shape, for example, which has a plurality of comb teeth*", ¶ 0081).

Regarding claim 22, Fujimori further discloses that the first electrode (3) has a structured surface ("*The first electrode 3 is …formed into a shape, for example, which has a plurality of comb teeth*", ¶ 0081).

Regarding claim 23, Fujimori discloses a photovoltaic cell, comprising:

- a substrate (2, fig. 2, ¶ 0069) having a surface (top surface of the substrate 2);
- a support layer (barrier layer 8; fig. 2) having a surface;
- a first electrode (electrode 6, fig. 2, ¶ 0069), the support layer being between the substrate (2) and the electrode (6);
- a second electrode (electrode 3, fig. 2, ¶ 0069); and
- an organic semiconductor (hole transport layer 5, fig. 2; ¶ 0069, 0104, 0016, 0221, 0223) between the first (6) and second (3) electrodes,
    - wherein
        - a surface of the organic semiconductor (top surface of layer 5) is planar (see fig. 1);
        - at least one surface being selected from the group consisting of the surface of the substrate (2) and the surface of the support layer (8).

However, Fujimori does not explicitly disclose whether the substrate has a surface that is structured.

Saurer teaches a photovoltaic device (photovoltaic cell 1; see fig. 2; col. 3, lines 6-65) wherein the substrate (2) is structured (see fig. 2; col. 3, lines 55-62). Saurer further discloses that the surface of the semiconductor layer (16) is planar. Saurer utilizes a structured substrate because such use is conventional in the photovoltaic art as it allows for a cell having a relatively large efficiency of light collection by multiple diffusion of the light (col. 4, lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have teachings of Saurer in the method of Fujimori and structure the surface of the substrate, because such use is conventional in the solar or photovoltaic art as it allows for a cell having a relatively large efficacy of light collection by multiple diffusion of the light, as taught by Saurer.

Regarding claim 27, Fujimori further discloses that the support layer (8) has a planar surface (see fig. 1).

13. Claims 12 and 13 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Fujimori in view of Saurer as applied to claim 7 above, and further in view of Nakamura.

Regarding claim 12, Fujimori in view of Saurer discloses a photovoltaic cell (photoelectric conversion element, see title) addressing all the limitation of the instant claim 7, as addressed above. Fujimori, however, does not explicitly disclose whether the photovoltaic cell further comprise a planarized layer between the substrate and the first electrode.

Nakamura teaches a photovoltaic cell (photoelectric conversion device, see title) wherein the cell comprises a planarized layer (metal mesh 9, fig 2B) between the substrate (transparent substrate 13, fig. 2B, Col. 29, lines 49-54) and first electrode (transparent conductor layer, 12, fig. 2B, Col. 29, lines 49-54). Nakamura uses the additional planarized layer between the substrate (13) and the first electrode (12)

because it allows for a decrease in the resistance of the transparent substrate (Col. 6, lines 22-26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the planarized layer of Nakamura between the substrate and electrode in the photovoltaic cell of Fujimori in view of Saurer, because it allows for a decrease in the resistance of the transparent substrate, as taught by Nakamura.

Regarding claim 13, Fujimori in view of Saurer and Nakamura discloses that a planarized layer between the substrate and the first electrode. Since the planarized layer is in between the substrate and the first electrode, the electrode is disposed on the planarized surface.

14. Claims 24 and 25 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Fujimori in view of Saurer as applied to claim 23 above, and further in view of Shinohara.

Regarding claim 24, Applicant is directed above for complete discussion of Fujimori in view of Saurer with respect to claim 23, which is incorporated herein. Fujimori, however, is silent as to whether the surface of the support layer is structured.

Shinohara discloses a solar cell wherein a support layer (barrier layer 11; fig. 2) supported by the first electrode (Al film 10) and the surface of the support layer (11) is structured (see fig. 2). Shinohara utilizes a structured barrier layer, i.e., support layer because it absorbs a long wavelength component of light easily (col. 9, lines 14-15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have structured support layer of Fujimori as taught by Shinohara, because it allows the absorption of long wavelength component of light easily, as taught by Shinohara.

Regarding claim 25, Fujimori in view of Saurer further discloses that the surface of the substrate (2) is structured (as discussed above for claim 23).

15. Claims 23, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori in view of Shinohara.

Regarding claims 23 and 24, Fujimori discloses a photovoltaic cell, comprising:

- a substrate (2, fig. 2, ¶ 0069) having a surface (top surface of the substrate 2);
- a support layer (barrier layer 8; fig. 2) having a surface;
- a first electrode (electrode 6, fig. 2, ¶ 0069), the support layer being between the substrate (2) and the electrode (6);
- a second electrode (electrode 3, fig. 2, ¶ 0069); and
- an organic semiconductor (hole transport layer 5, fig. 2; ¶ 0069, 0104, 0016, 0221, 0223) between the first (6) and second (3) electrodes,
    - wherein
        - a surface of the organic semiconductor (top surface of layer 5) is planar (see fig. 1);

- at least one surface being selected from the group consisting of the surface of the substrate (2) and the surface of the support layer (8).

However, Fujimori does not explicitly disclose whether the surface of the support layer is structured.

Shinohara discloses a solar cell wherein a support layer (barrier layer 11; fig. 2) supported by the first electrode (Al film 10) and the surface of the support layer (11) is structured (see fig. 2). Shinohara utilizes a structured barrier layer, i.e., support layer because it absorbs a long wavelength component of light easily (col. 9, lines 14-15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have structured support layer of Fujimori as taught by Shinohara, because it allows the absorption of long wavelength component of light easily, as taught by Shinohara.

Regarding claim 26, Fujimori in view of Saurer further discloses that the surface of the substrate (2) is planar (see fig. 2).

16. Claim 25 is rejected under 35 U.S.C. 102(b) as being unpatentable over Fujimori in view of Shinohara as applied to claim 24 above, and further in view of Saurer.

Applicant is directed above for complete discussion of Fujimori in view of Shinohara with respect to claim 24, which is incorporated herein. Fujimori in view of Saurer further discloses that the surface of the substrate (2) is planar (see fig. 2). However, Fujimori is silent as to whether the surface of the support layer is structured.

Saurer teaches a photovoltaic device (photovoltaic cell 1; see fig. 2; col. 3, lines 6-65) wherein the substrate (2) is structured (see fig. 2; col. 3, lines 55-62). Saurer further discloses that the surface of the semiconductor layer (16) is planar. Saurer utilizes a structured substrate because such use is conventional in the photovoltaic art as it allows for a cell having a relatively large efficiency of light collection by multiple diffusion of the light (col. 4, lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have teachings of Saurer in the method of Fujimori and structure the surface of the substrate, because such use is conventional in the solar or photovoltaic art as it allows for a cell having a relatively large efficacy of light collection by multiple diffusion of the light, as taught by Saurer.

### ***Response to Arguments***

17. Applicant's arguments filed on 10/06/2008 have been fully considered but they are moot in view of the new ground(s) of rejection as necessitated by the amendment.

Applicant argues that “Fujimori discloses only processes for making his device in which the semiconductor layer has the same general degree of structure as the substrate. As would also be understood by one skilled in the art, Tiedje also discloses only processes in which or making his device in which the semiconductor layer has the same general degree of structure as the substrate. Thus, even if Fujimori and Tiedje were somehow combined in the manner suggested by the Examiner, the result would be a device with a substrate having a surface with some degree of structure and a

semiconductor having a surface with generally the same degree of structure. There is nothing in Fujimori or Tiedje that would have made it obvious to further modify such a device so that the semiconductor layer would have a planar surface" (see Remarks, page 1).

The Examiner respectfully disagrees with the Applicant. Examiner notes that the object of the Fujimori's invention was to provide a dye-sensitized photoelectric conversion element which comprises a first electrode; a second electrode arranged opposite to the first electrode; an electron transport layer arranged between the first electrode and the second electrode, at least a part of the electron transport layer being formed into porous; a dye layer which is in contact with the electron transport layer; a hole transport layer arranged between the electron transport layer and the second electrode; and short-circuit preventing means for preventing or suppressing short-circuit between the first electrode and the hole transport layer (see [0009-0010]). Applicant seems to rely on fig. 2 to base their arguments. However, fig. 2 is just a cross sectional view of the Fujimori's invention and one reading Fujimori as a whole would have readily appreciated that the substrate or any other layer of the Fujimori's photoelectric conversion device can be structured or planar without departing from the scope of the invention as shown in [0363], i.e., to allow for a dye-sensitized photoelectric conversion element which comprises a first electrode; a second electrode arranged opposite to the first electrode; an electron transport layer arranged between the first electrode and the second electrode, at least a part of the electron transport layer being formed into porous; a dye layer which is in contact with the electron transport layer; a hole transport

layer arranged between the electron transport layer and the second electrode; and short-circuit preventing means for preventing or suppressing short-circuit between the first electrode and the hole transport layer (as shown in [0009-0010]).

Examiner also notes that only the teaching of structuring the substrate is utilized the make the rejection. Tiedje teaches a photovoltaic device (col. 3, lines 41-43) wherein the substrate (2) is structured (see fig. 2; col. 3, lines 41-43). Tiedje utilizes a structured substrate because such use is conventional in the photovoltaic art as it allows for an increase in the photoconductivity of the semiconductor at long wavelengths (col. 5, lines 11-15). Although in fig. 2 Tiedje shows that the semiconductor layer is structured, Tiedje never stated that the substrate can be structured only when the semiconductor layer is structured. Therefore, one of ordinary skill in the art at the time of the invention would be inclined to use the teachings of Tiedje to increase in the photoconductivity of the semiconductor at long wavelengths.

Therefore, the Examiner respectfully disagrees with the Applicant. However, the argument is also moot in view of new ground(s) of rejection.

### ***Correspondence/Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-F, 0900-1700 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ALEXA NECKEL can be reached on (571) 272-1446. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

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/G. M./
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